



Portable Maintenance Assistant (PMA)

An Overview of NAVSEA Pilots

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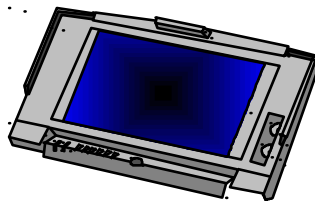
NAVSEA 04M



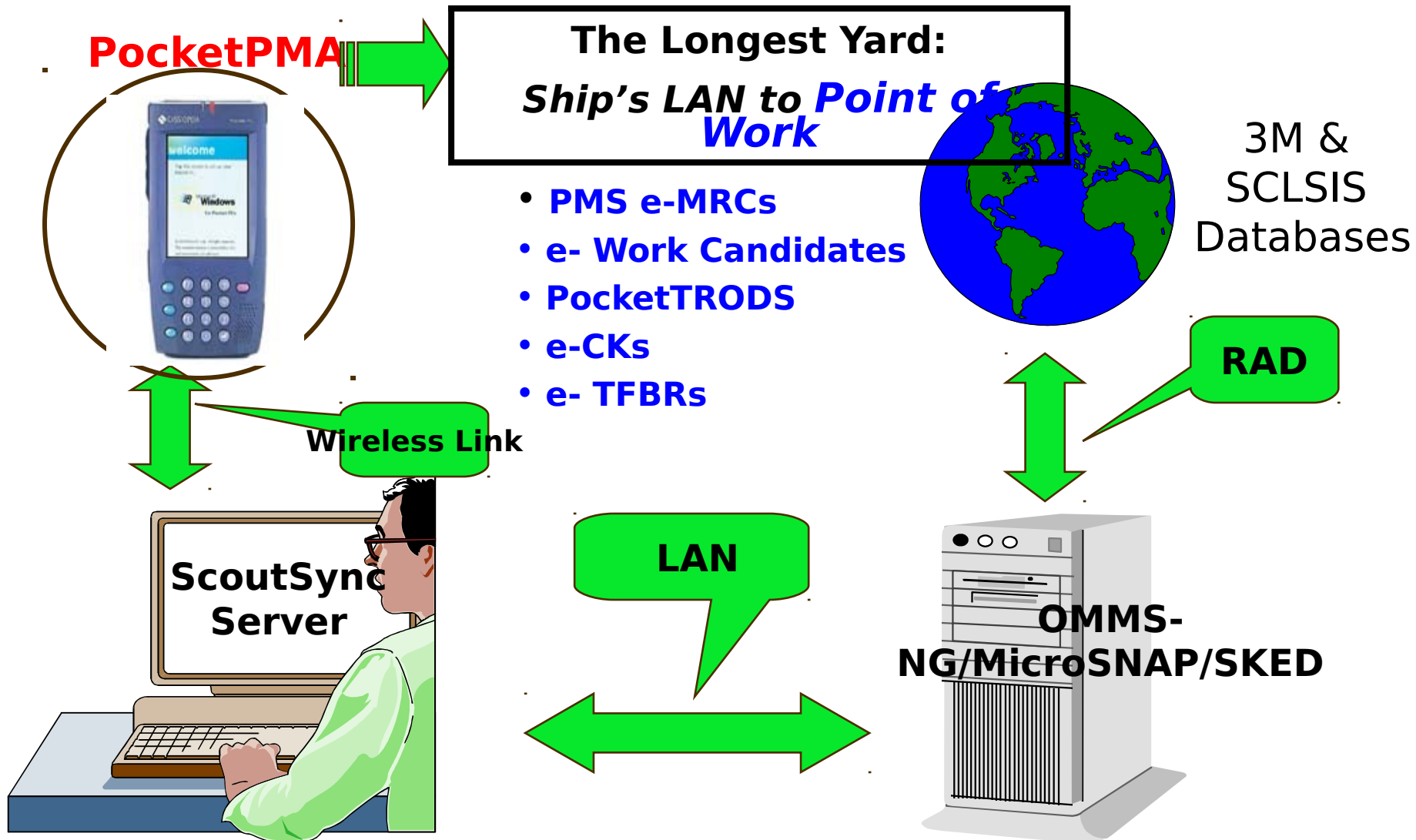
Portable Maintenance Assistant (PMA)

An application of mobile computing for paperless maintenance and In-Service logistics

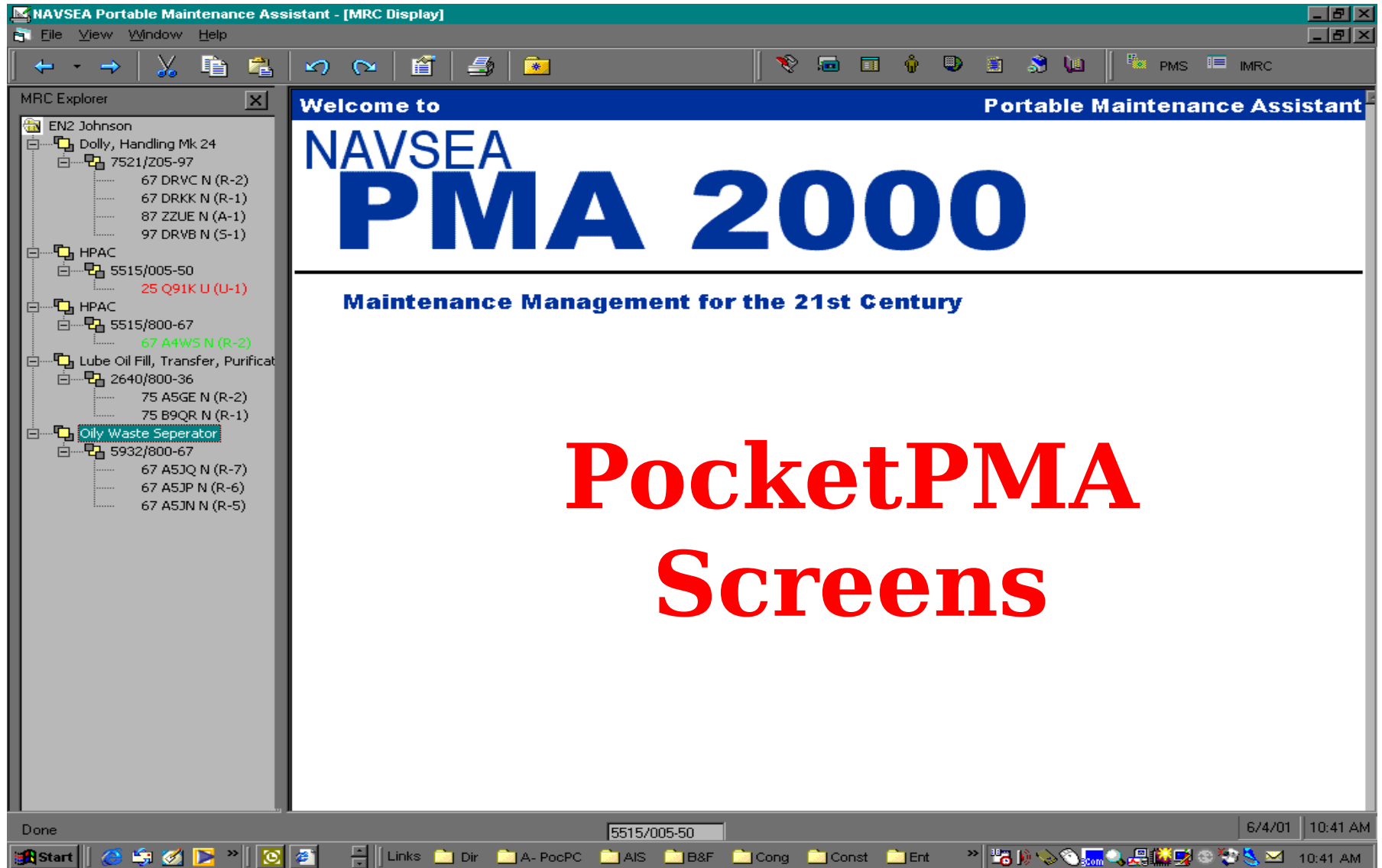
- **Purpose:** **IMPROVE PROCESS EFFICIENCY** by providing user friendly paperless tools for executing preventive and corrective maintenance at the point of work.
- Functions supported include digitized data collection, e-feedback reports, smart queries for logistics data, diagnostic & troubleshooting capability, e-work candidates (4790/2K & CK)
- Data transfer capability using “IR” or wireless interface via ship’s LAN to ship’s OMMS-NG / MicroSNAP / SKED
- **Benefits:**
 - Workload Reduction, Paperless maintenance management and digitized data collection
 - Captures maintenance requirements (4790/2K & CK) at point of work
 - Improved access to ship’s infrastructure using wireless capability



Pocket Portable Maintenance Assistant (PocketPMA)



An application of mobile computing for paperless maintenance and logistics



PocketPMA Configuration Linked Work Candidate

Generator

NAVSEA Portable Maintenance Assistant - [MRC Display]

File View Window Help

MRC Explorer

EN2 Johnson

Virtual CE

4790/2K Editor 11:19a

XP01-T001 1C LSB

Summary

NO LINE SHAFT BEARING INSTALLE

| Wrk Ctr | RIN | APL | EIC |
|---------|-------|------------|--------|
| XP01 | 1RHTQ | XSYSTEMITE | U00000 |

| ESWBS | Location | Serial |
|--------------|------------|--------|
| 24400SY1149A | NOT APPLIC | SNA001 |

| First Contact | Second Contact |
|---------------|----------------|
| MM1 SMITH | MM1 SMITH |

Equip Data General Remarks

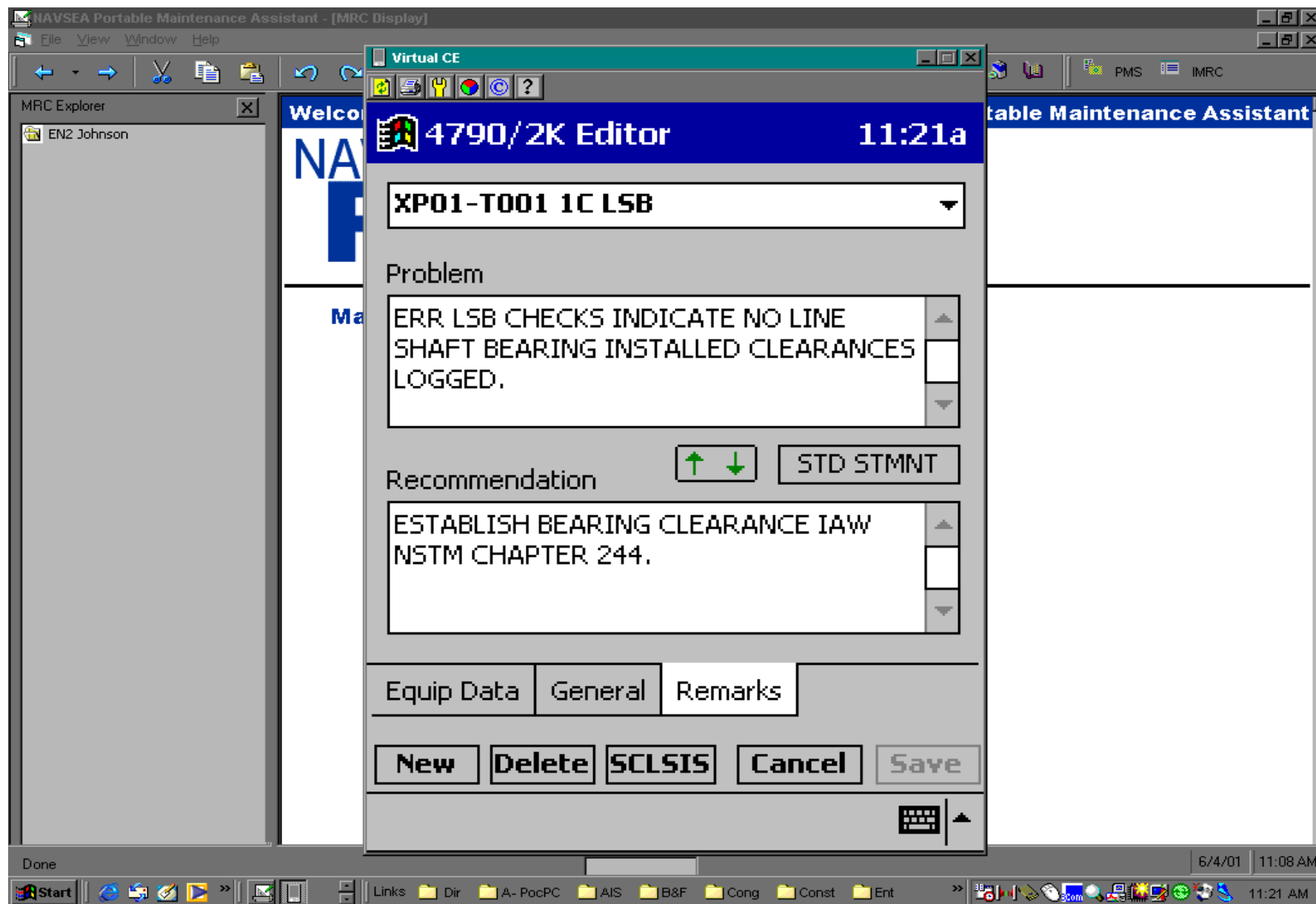
New Delete SCLSIS Cancel Save

Done

6/4/01 11:08 AM

Start Links Dir JA- PocPC AIS B&F Cong Const Ent 11:19 AM

PocketPMA Work Candidate Standard Statements

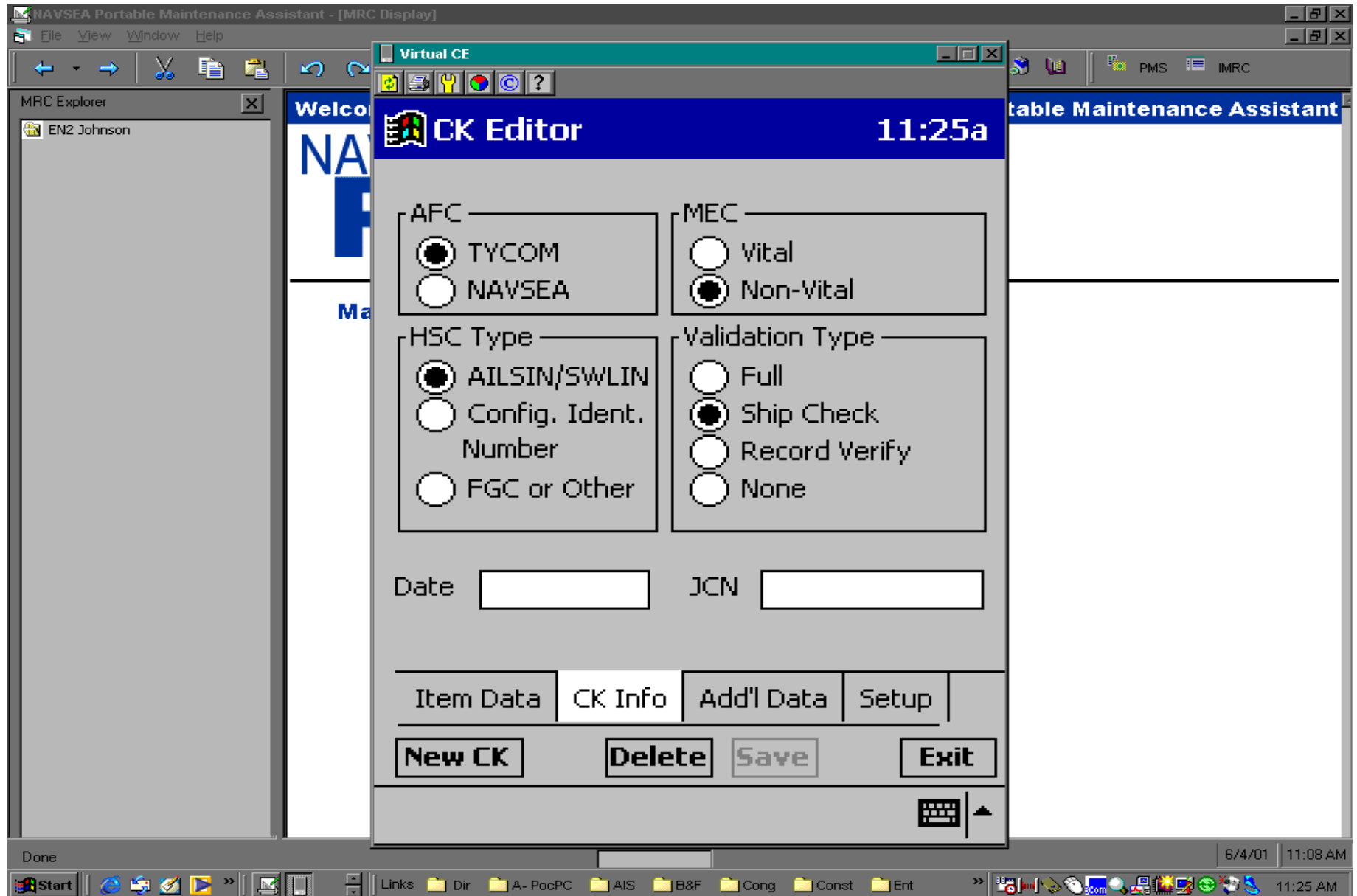


The screenshot displays the NAVSEA Portable Maintenance Assistant (PMA) software interface. The main window is titled "NAVSEA Portable Maintenance Assistant - [MRC Display]". On the left, the "MRC Explorer" pane shows a tree structure with "EN2 Johnson" selected. The central area is divided into several sections:

- Header:** "4790/2K Editor" and "11:21a".
- Problem Section:** A dropdown menu shows "XP01-T001 1C LSB". Below it, a text box contains the message: "ERR LSB CHECKS INDICATE NO LINE SHAFT BEARING INSTALLED CLEARANCES LOGGED."
- Recommendation Section:** A text box contains the message: "ESTABLISH BEARING CLEARANCE IAW NSTM CHAPTER 244." Above this box are up and down arrow buttons and a button labeled "STD STMNT".
- Navigation Tabs:** "Equip Data", "General", and "Remarks" (currently selected).
- Action Buttons:** "New", "Delete", "SCLISIS", "Cancel", and "Save".

The bottom of the screen shows a Windows taskbar with the Start button, various application icons, and a system tray displaying the date "6/4/01" and time "11:08 AM".

PocketPMA CK Form



NAVSEA Portable Maintenance Assistant - [MRC Display]

File View Window Help

MRC Explorer

EN2 Johnson

Welcome

NAVSEA

Ma

Virtual CE

CK Editor 11:25a

AFC

☒ TYCOM

☐ NAVSEA

MEC

☐ Vital

☒ Non-Vital

HSC Type

☒ AILSIN/SWLIN

☐ Config. Ident. Number

☐ FGC or Other

Validation Type

☐ Full

☒ Ship Check

☐ Record Verify

☐ None

Date JCN

Item Data CK Info Add'l Data Setup

New CK Delete Save Exit

Done

Start

Links Dir A- PocPC AIS B&F Cong Const Ent

6/4/01 11:08 AM

11:25 AM

PocketPMA Feedback Form

NAVSEA Portable Maintenance Assistant - [MRC Display]

File View Window Help

MRC Explorer

EN2 Johnson

Virtual CE

Feedback Report 11:28a

TFBR: 2441/985 A4WX (CAT B)

Workcenter: EA01

Cog Activity: ☒ FTSCCLANT ☐ FTSCPCAC

Category: ☐ Category A (Information Request) ☒ Category B (Technical Issues)

Problem Description: ☐ Technical ☒ TYCOM Assistance ☐ Other

| Category | Component | Remarks |
|----------|-----------|---------|
| Submit | New TFBR | Delete |
| Exit | | |

Done 6/4/01 11:08 AM

Start Links Dir A- PocPC AIS B&F Cong Const Ent 11:28 AM



Summary

PMA is a tool for :

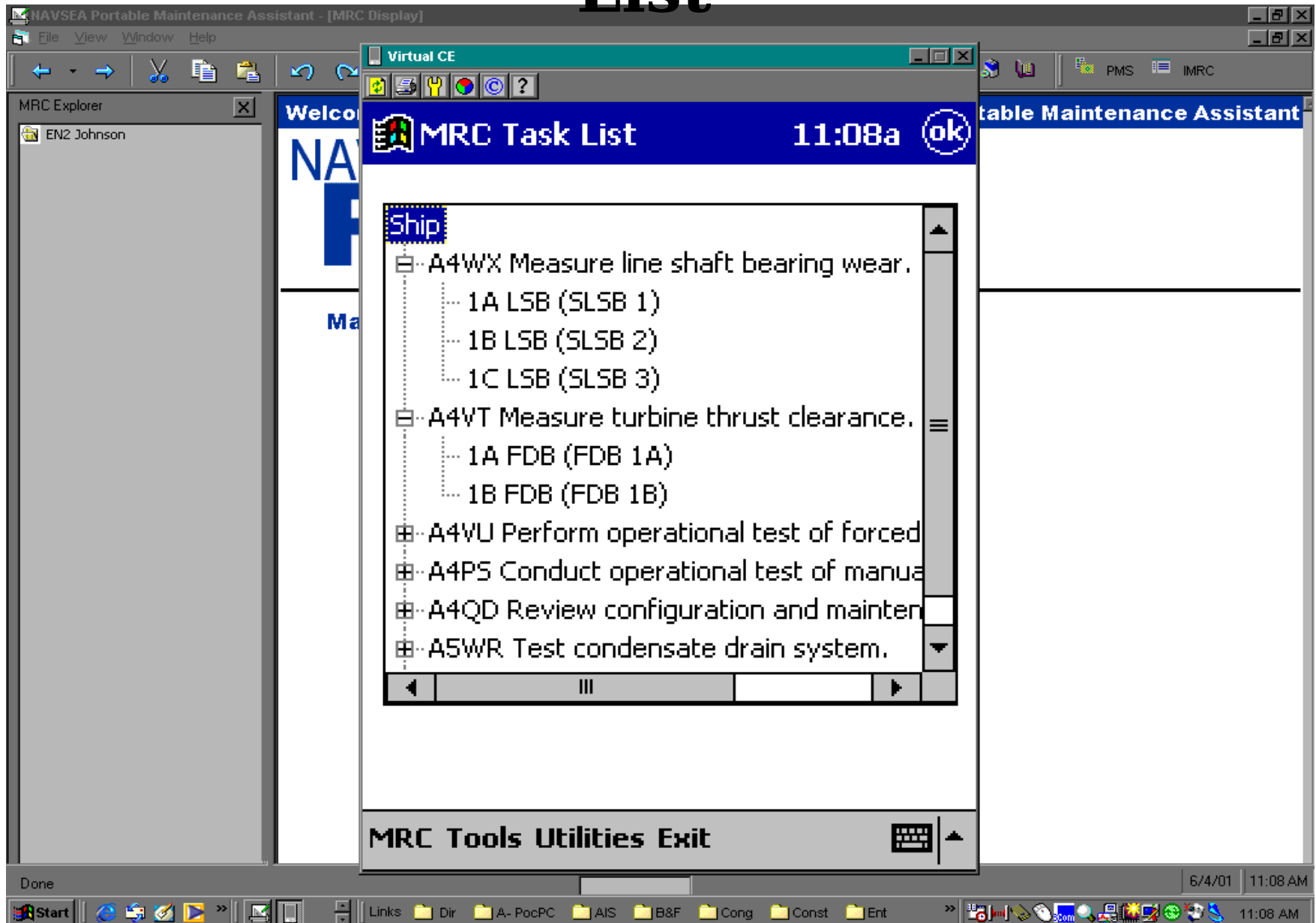
- Reducing Shipboard Workload by
 - eliminating paper based processes
 - Improving quality of 2Ks, CKs and Feedback reports
 - delivering “smart” in-service logistics data
- Providing diagnostic and troubleshooting capability at the point-of- work
- Using Wireless technology to reduce wait time and improve access to shipboard resources

**URL for PocketPMA Tutorial :
<http://www.lcesd.com/pvtools>**



Back up

PocketPMA MRC Task List

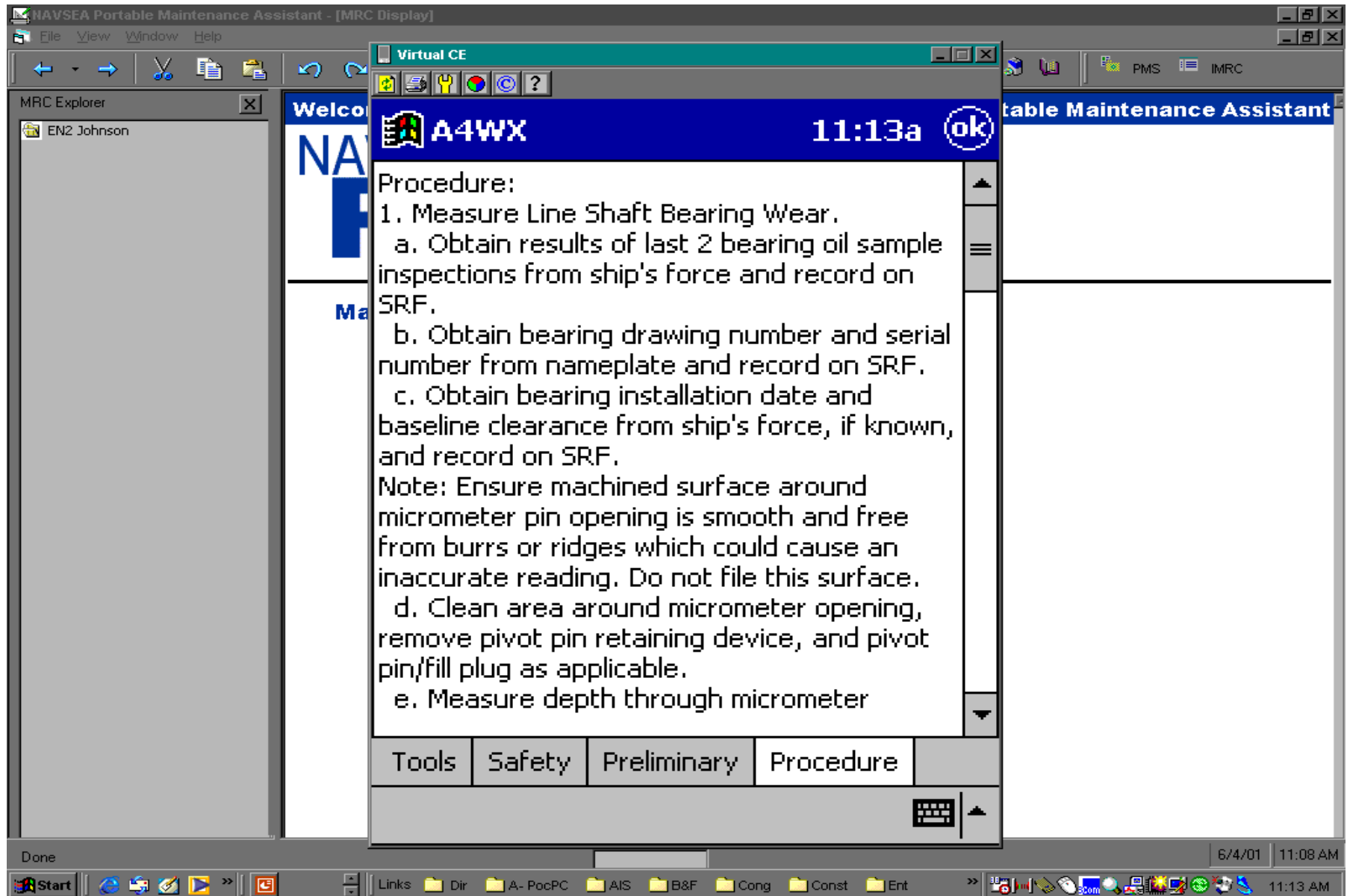


The screenshot displays the NAVSEA Portable Maintenance Assistant (PMA) software interface. The main window is titled "NAVSEA Portable Maintenance Assistant - [MRC Display]". The interface includes a menu bar (File, View, Window, Help) and a toolbar with various icons. On the left, there is an "MRC Explorer" pane showing a tree structure with "EN2 Johnson" selected. The main display area is titled "MRC Task List" and shows a list of tasks under the "Ship" category. The tasks are:

- A4WX Measure line shaft bearing wear.
 - 1A LSB (SLSB 1)
 - 1B LSB (SLSB 2)
 - 1C LSB (SLSB 3)
- A4VT Measure turbine thrust clearance.
 - 1A FDB (FDB 1A)
 - 1B FDB (FDB 1B)
- A4VU Perform operational test of forced
- A4PS Conduct operational test of manual
- A4QD Review configuration and maintenance
- A5WR Test condensate drain system.

The interface also shows a "Virtual CE" window and a "MRC Tools Utilities Exit" button at the bottom. The system tray at the bottom right indicates the date as 6/4/01 and the time as 11:08 AM.

PocketPMA MRC Screen



The screenshot displays the NAVSEA Portable Maintenance Assistant (PMA) software interface. The main window is titled "NAVSEA Portable Maintenance Assistant - [MRC Display]". The interface includes a menu bar (File, View, Window, Help), a toolbar with navigation icons, and a sidebar labeled "MRC Explorer" showing a tree view with "EN2 Johnson".

The central display area shows a "Virtual CE" window with a blue header bar containing the text "A4WX" and "11:13a". Below the header, the "Procedure:" section lists the following steps:

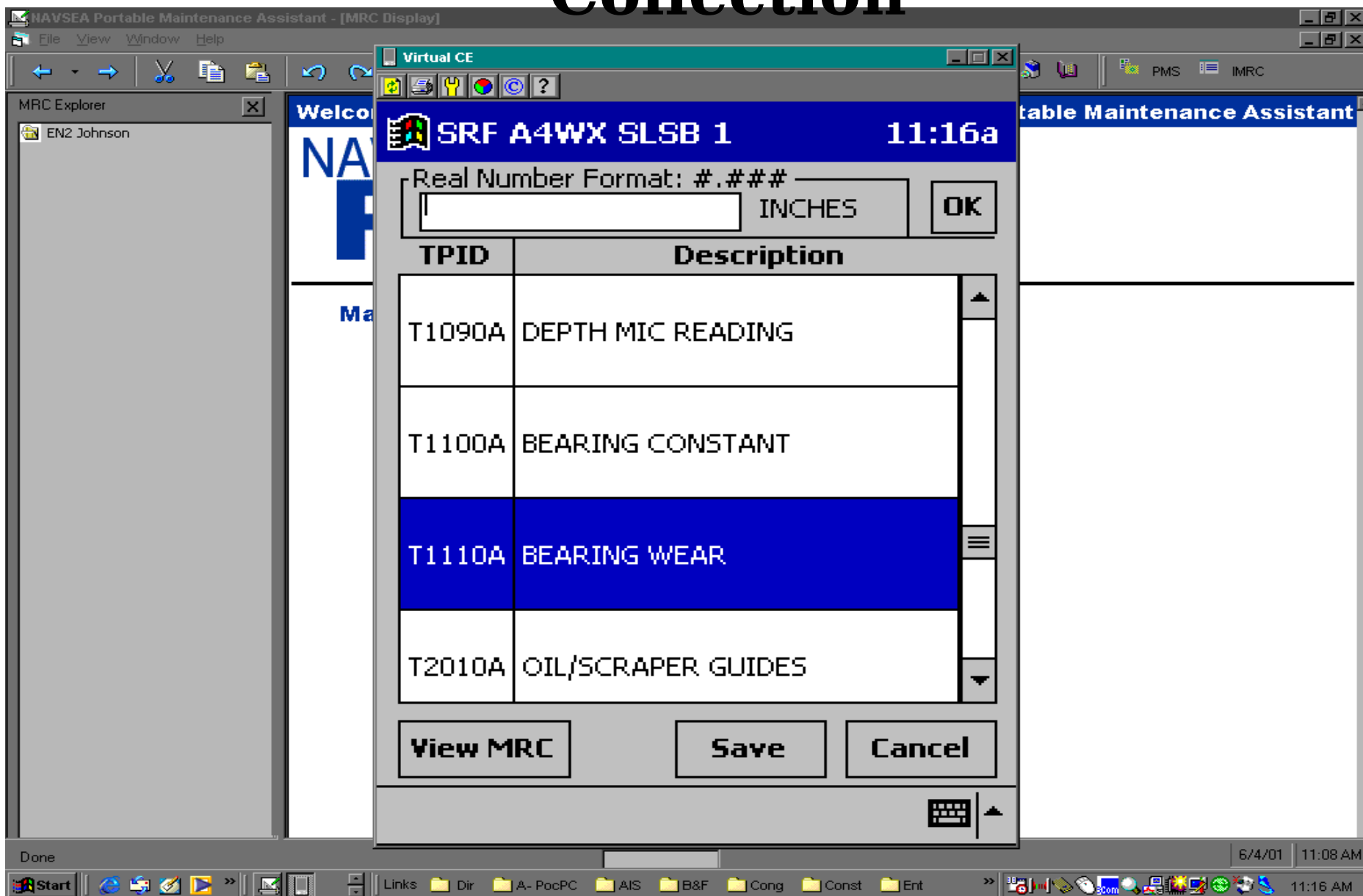
1. Measure Line Shaft Bearing Wear.
 - a. Obtain results of last 2 bearing oil sample inspections from ship's force and record on SRF.
 - b. Obtain bearing drawing number and serial number from nameplate and record on SRF.
 - c. Obtain bearing installation date and baseline clearance from ship's force, if known, and record on SRF.
 - d. Clean area around micrometer opening, remove pivot pin retaining device, and pivot pin/fill plug as applicable.
 - e. Measure depth through micrometer

A note below the procedure states: "Note: Ensure machined surface around micrometer pin opening is smooth and free from burrs or ridges which could cause an inaccurate reading. Do not file this surface."

At the bottom of the procedure window, there are four tabs: "Tools", "Safety", "Preliminary", and "Procedure". The "Procedure" tab is currently selected.

The bottom status bar shows the date "6/4/01" and time "11:08 AM". The Windows taskbar at the very bottom shows the Start button, several application icons, and the system clock displaying "11:13 AM".

PocketPMA MRC Data Collection



The screenshot displays the NAVSEA Portable Maintenance Assistant (PMA) software interface. A 'Virtual CE' window is open, showing a table of MRC data. The table has two columns: 'TPID' and 'Description'. The data is as follows:

| TPID | Description |
|--------|--------------------|
| T1090A | DEPTH MIC READING |
| T1100A | BEARING CONSTANT |
| T1110A | BEARING WEAR |
| T2010A | OIL/SCRAPER GUIDES |

Below the table are three buttons: 'View MRC', 'Save', and 'Cancel'. The 'View MRC' button is highlighted. The background shows the main PMA interface with a 'MRC Explorer' pane on the left and a 'Welcome' message on the right. The taskbar at the bottom shows the date as 6/4/01 and the time as 11:08 AM.



PocketPMA User Selected Data Tracking Utility

NAVSEA Portable Maintenance Assistant - [MRC Display]

File View Window Help

MRC Explorer

- EN2 Johnson

Welcome to NAVSEA Portable Maintenance Assistant

LPAC 1 LO TEMP 11:31a

Select Data Set

LPAC 1 LO TEMP

New Value DEG F (###) OK

| Reading | Date |
|-----------|----------------------|
| 100 DEG F | 5/1/2001 7:33:00 AM |
| 100 DEG F | 5/2/2001 7:33:00 AM |
| 100 DEG F | 5/3/2001 7:33:00 AM |
| 105 DEG F | 5/4/2001 7:33:00 AM |
| 110 DEG F | 5/5/2001 7:33:00 AM |
| 115 DEG F | 5/6/2001 7:33:00 AM |
| 120 DEG F | 5/7/2001 7:33:00 AM |
| 125 DEG F | 5/8/2001 7:33:00 AM |
| 130 DEG F | 5/9/2001 7:33:00 AM |
| 130 DEG F | 5/10/2001 7:33:00 AM |

View Data View Graph Enter Data

Exit

Done

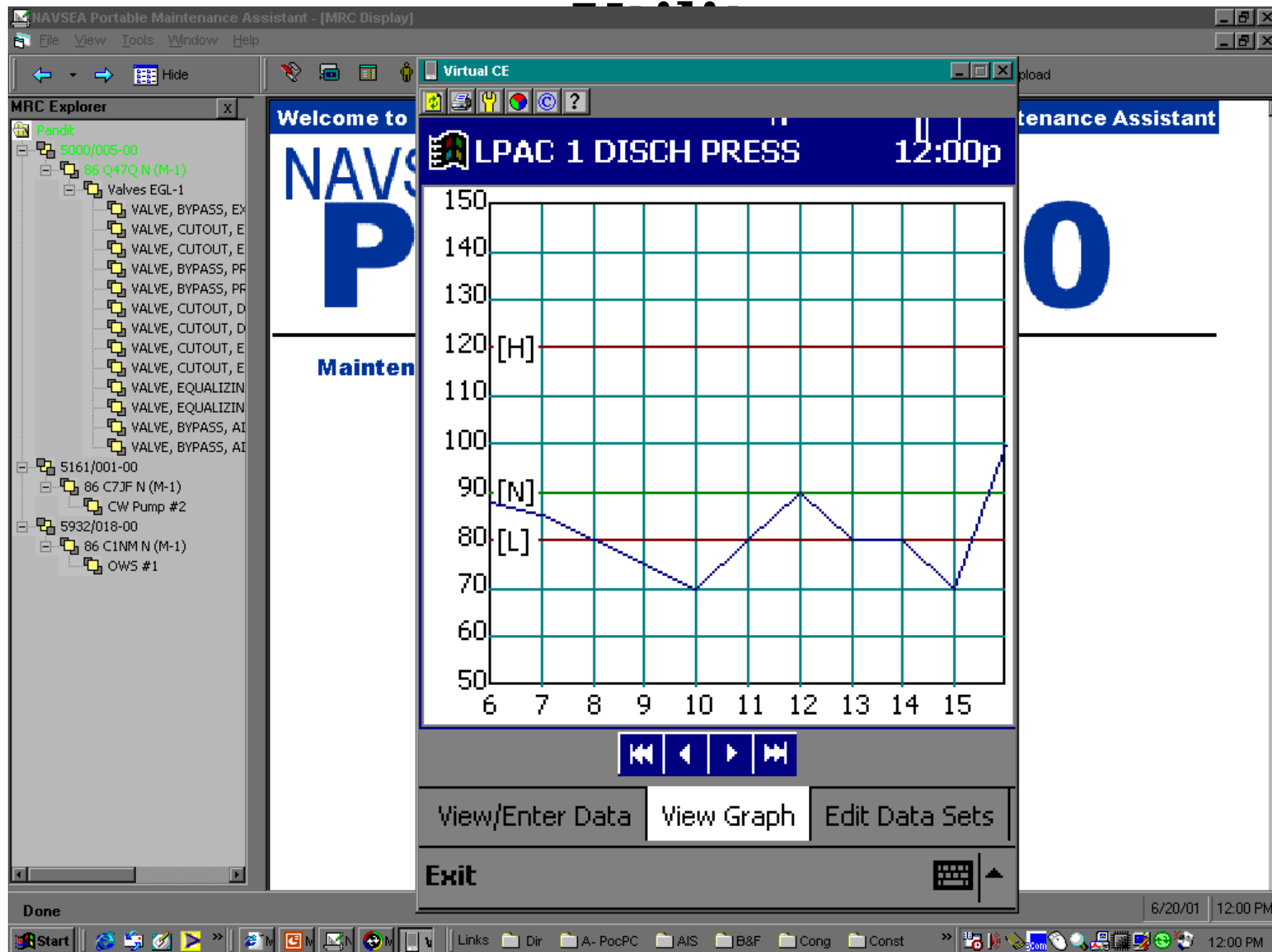
Start

Links Dir A- PocPC AIS B&F Cong Const Ent

6/4/01 11:08 AM

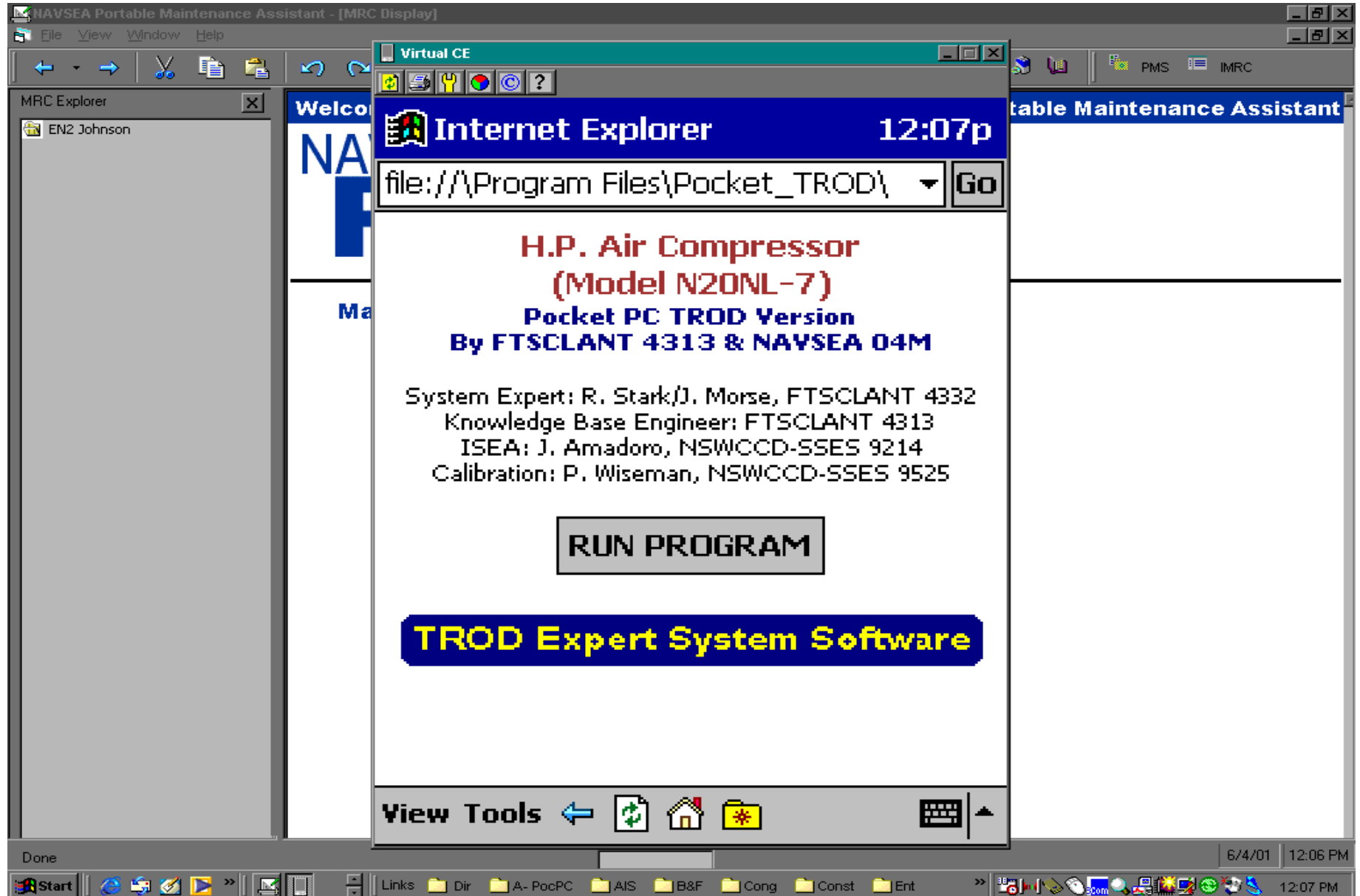
11:31 AM

PocketPMA Graphing





PocketPMA TROD



PocketPMA NAVOSH Manual



Figure 23 NAVOSH Manual

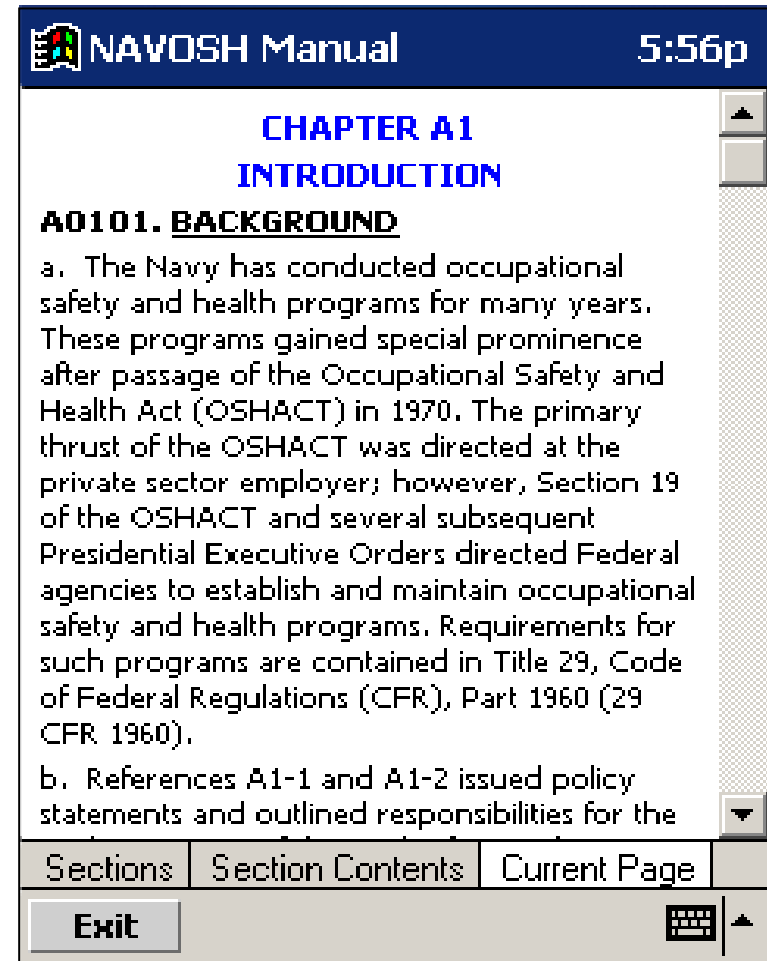


Figure 24 NAVOSH Manual (Current Page)

Why PMAs ???

■ **A tool to Bridge “the Longest Yard”**

- Top side to machinery spaces
- A technology solution for hard to navigate environment

■ **Hardware**

- Size - Getting smaller
- Memory - Significant improvements in RAM and Storage
- Displays - Color and better resolution
- Battery - Significant improvements to battery life

■ **Software**

- Improvements to PDA Operating Systems
- Availability of easy to use software development tools
- Improved Hand writing and voice recognition technologies

■ **Cost**

- Affordable

■ **Standards**

- XML and 802.11b